

# LABORATORY ANALYSIS



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**COPELAND (MHDS)**  
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Department **WINDING**  
Equipment No. **TRANS03 DIP & BAKE CONVEYOR #1 (00013)**  
System **Transmission**  
Oil Type **ENGINEERED LUBRICANTS ENLUBE S-POLY-G-2188-WGO-X (--- GAL)**

## Diagnosis

Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. Please specify the component make and model with your next sample. L, s, % large particles, severity index and wpc levels are severe. There is a high amount of silt (particulates < 14 microns in size) present in the fluid. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. Phosphorus(P) ppm levels are severely low. The fluid is no longer serviceable as a result of the abnormal and/or severe wear.

## Sample Information

|                     |           |                    |             |             |
|---------------------|-----------|--------------------|-------------|-------------|
| Lab Number          | New       | <b>2405-00136</b>  | 2312-00788  | 2202-00514  |
| Date of Sample      | (Typical) | <b>28 Apr 2024</b> | 14 Dec 2023 | 01 Feb 2022 |
| Oil Added           |           | <b>UNK</b>         | UNK         | UNK         |
| Last Drain Date     |           | --                 | --          | --          |
| Last Filter Service |           | --                 | --          | --          |
| Sample Point        |           | ---                | ---         | ---         |
| Sample Status       |           | <b>SEVERE</b>      | SEVERE      | SEVERE      |

## VISCOSITY INDEX (ASTM D445)

|                 |     |     |                |         |         |
|-----------------|-----|-----|----------------|---------|---------|
| cSt Vis. @ 40C  | cSt | 460 | <b>475.0</b>   | 488.5   | 478.4   |
| SSU Vis. @ 100F | SSU |     | <b>2,201.1</b> | 2,263.4 | 2,216.7 |
| cSt Vis. @ 100C | cSt |     | <b>79.64</b>   | 82.53   | 79.23   |
| SSU Vis. @ 210F | SSU |     | <b>371.8</b>   | 385.2   | 369.6   |
| cSt Vis. @ 40C  | cSt | 460 | <b>475.0</b>   | 488.5   | 478.4   |
| SSU Vis. @ 40C  | SSU |     | <b>2,201.1</b> | 2,263.4 | 2,216.7 |
| cSt Vis. @ 100C | cSt |     | <b>79.64</b>   | 82.53   | 79.23   |
| SSU Vis. @ 100C | SSU |     | <b>371.8</b>   | 385.2   | 369.6   |
| Viscosity Index |     |     | <b>251</b>     | 254     | 249     |

## TOTAL ACID NUMBER (NEUT. NO.)(ASTM D974)

|               |          |      |             |      |      |
|---------------|----------|------|-------------|------|------|
| TAN, mg KOH/g | mg KOH/g | 0.61 | <b>0.14</b> | 0.12 | 0.44 |
|---------------|----------|------|-------------|------|------|

## Hiac Particle Count/ISO 4406

|                    |              |           |                 |           |          |
|--------------------|--------------|-----------|-----------------|-----------|----------|
| 4 Micron & Larger  | particles/ml | >640000   | <b>927,089</b>  | 1,038,834 | 987,900  |
| 6 Micron & Larger  | particles/ml | >80000    | <b>562,767</b>  | 668,982   | 565,562  |
| 14 Micron & Larger | particles/ml | >2500     | <b>25,415</b>   | 29,136    | 6,806    |
| ISO Code           | ISO 4406(c)  | >26/23/18 | <b>27/26/22</b> | 27/27/22  | 27/26/20 |

## ENERGY DISPERSIVE XRF - PPM (\*BELOW MINIMUM DETECTION LIMIT)

|                |     |     |            |     |     |
|----------------|-----|-----|------------|-----|-----|
| Aluminum (Al)  | ppm |     | *          | *   | *   |
| Antimony (Sb)  | ppm |     | *          | *   | *   |
| Cadmium (Cd)   | ppm |     | *          | *   | *   |
| Chromium (Cr)  | ppm |     | *          | *   | *   |
| Cobalt (Co)    | ppm |     | *          | *   | *   |
| Copper (Cu)    | ppm |     | <b>54</b>  | 246 | 117 |
| Iron (Fe)      | ppm |     | <b>41</b>  | 13  | 14  |
| Lead (Pb)      | ppm |     | *          | *   | *   |
| Manganese (Mn) | ppm |     | *          | *   | *   |
| Molybdenum(Mo) | ppm |     | *          | *   | *   |
| Nickel (Ni)    | ppm |     | *          | *   | *   |
| Potassium (K)  | ppm |     | *          | *   | *   |
| Tin (Sn)       | ppm |     | *          | 15  | *   |
| Titanium (Ti)  | ppm |     | *          | *   | *   |
| Vanadium (V)   | ppm |     | *          | *   | *   |
| Barium (Ba)    | ppm |     | *          | *   | *   |
| Calcium (Ca)   | ppm |     | *          | *   | *   |
| Magnesium (Mg) | ppm |     | *          | *   | *   |
| Phosphorus(P)  | ppm | 957 | <b>259</b> | 288 | 731 |
| Silicon (Si)   | ppm |     | *          | *   | *   |
| Zinc (Zn)      | ppm |     | *          | 10  | *   |
| Chlorine (Cl)  | ppm |     | *          | *   | *   |
| Sulfur (S)     | ppm | 555 | <b>254</b> | 217 | 315 |

Customer Id: MOTMCA  
Sample No.: EN24050136  
Lab Number: 24050136  
Test Package: TEST

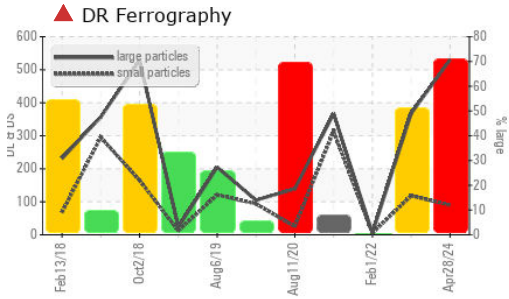


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# OIL ANALYSIS REPORT



### DR FERROGRAPHY READINGS

|     |         |         |         |       |
|-----|---------|---------|---------|-------|
| L   |         | ▲ 530.0 | ▲ 367.5 | ■ 5.0 |
| S   |         | ▲ 90.0  | ▲ 118.5 | ■ 5.0 |
| WPC | DL + DS | ▲ 620   | ▲ 486   | ■ 10  |

### Contamination

|       |       |            |     |     |
|-------|-------|------------|-----|-----|
| Water | >0.45 | <b>NEG</b> | NEG | NEG |
|-------|-------|------------|-----|-----|

